How to Create a HAZUS User Group

HAZUS User Groups help create disaster resistant communities

FEMA 404

April 2002

HAZUS®

TABLE OF CONTENTS

PURPOSE AND USE OF THIS DOCUMENT

This document provides information to help you form hazard-specific or multi-hazard HAZUS User Groups. You are reading this because you are thinking about starting a HAZUS User Group. You are a "champion," someone who believes in the power of the HAZUS tool and the potential of a HAZUS User Group. Your vision and commitment to this effort are essential to its success. This document provides you with information about how to create and maintain a HAZUS User Group, and shares lessons learned from successful HAZUS User Groups across the country.

HAZUS or Hazards U.S.
A standardized, nationally applicable, loss estimation methodology that uses PC-based geographic information system (GIS) software.

Several icons are used throughout the document to aid you in identifying and using information that interests you.

The **HAZUS User Group** icon shows you information about how to establish and run a HAZUS User Group.

The **HAZUS** icon shows you how HAZUS has been applied as a successful risk mitigation tool.

The **BAHUG** icon identifies specific examples drawn from the experiences of the first HAZUS User Group, the San Francisco Bay Area HAZUS User Group (BAHUG).

The **Definition** icon defines key terms and acronyms.

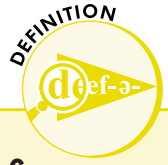
The **Note** icon provides useful reminders and tips based upon lessons learned.

HAZUS is a multi-hazard, risk-based management tool
HAZUS currently supports earthquake loss analysis and is being expanded to address flood and hurricane hazards as well.

HAZUS data sources include:
1– Use of default data to create rapid impressions of natural hazard damages at a regional level,
2– Use of user-supplied information to achieve more refined local results, and
3– Use of techniques supplied by experts to study special natural hazard scenarios.

WHAT IS A HAZUS USER GROUP?

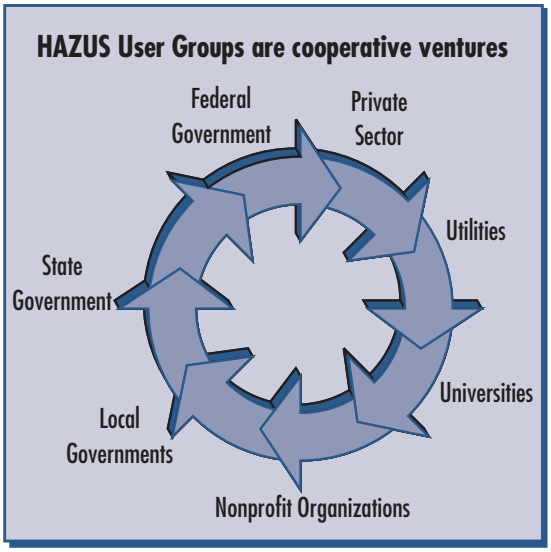
A HAZUS User Group is a cooperative venture or partnership among the public, private, and academic organizations. A HAZUS User Group combines the powerful data analysis capability of the HAZUS software and technology with the knowledge and judgment of risk managers, geographic information system (GIS) professionals, and natural hazard experts in the public and



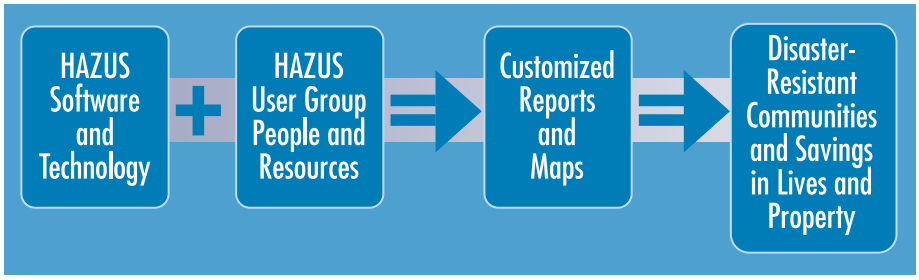
A HAZUS User Group
A cooperative venture between public, private, and academic organizations that uses HAZUS software and technology to build enhanced disaster-resistant communities, and save lives, time, and dollars. HAZUS User Groups can address earthquake, flood, and hurricane scenarios.

private sectors. A HAZUS User Group allocates resources, risks, and rewards to the two sectors according to their strengths and expertise. Members include representatives of:

- Private sector
- Federal, state, and local governments
- Utilities
- Universities
- Nonprofit organizations



To date, FEMA has helped form several HAZUS User Groups and others have evolved independently. Through HAZUS User Groups, communities can better use the HAZUS loss analysis and mapping



capabilities to create a greater understanding of hazards and their potential impact on the community. HAZUS User Group efforts support better informed risk management decision-making at the local, and regional levels. The results of the HAZUS User Group efforts include creating enhanced disaster-resistant communities and reducing loss of lives and property resulting from a disaster.

Involve FEMA in your HAZUS User Group
Representatives of FEMA should be involved in all HAZUS User Groups because FEMA offers technical resources, expertise, knowledge, and experience in risk management.

HAZUS User Groups distribute the costs of mitigation and response activities and thrive on the cooperation of diverse organizations. They attract and retain participants because they provide the potential to produce a higher level of information and change than can be accomplished through the work of a single organization. For example, access to data and the ability to model multiple hazard and loss scenarios attracted participants to the New York City HAZUS Working Group.

Participating organizations share a similar goal but the approach, talent, and resources of each are unique. HAZUS User Groups assimulate the strategic direction of each participating organization, thereby helping to secure the organization's commitment to the group on an ongoing basis. By combining talent, resources, and consensus you bring strength and appeal to a HAZUS User Group.

BAHUG
The San Francisco Bay Area HAZUS User Group, the first public-private partnership formed in 1997. The BAHUG includes representatives of 11counties and many private-sector organizations. It focuses on building a large network of people and training them to use the HAZUS software.

WHO FORMS A HAZUS USER GROUP?

HAZUS User Groups are formed by champions like you who are committed to making the HAZUS User Group concept a reality. Often champions are risk managers at the federal, state, or local level. Some are private sector managers who see the value of forming a HAZUS User Group as an opportunity for their organization.

The members of HAZUS User Groups are volunteers. Most individuals join a HAZUS User Group because doing so will help them achieve the objectives of their organization. However, they usually will not be paid to participate, and their participation, at least initially, will not be mandated by their job description. In addition, each member of a HAZUS User Group should be willing to make a long-term commitment to the HAZUS User Group.

You need a "champion"
Jim Buika, formerly of Federal Emergency Management Agency (FEMA) Region IX, was the innovator of the HAZUS User Group concept and became the first "champion" by forming the Bay Area HAZUS User Group (BAHUG).

HOW HAS THE HAZUS USER GROUP CONCEPT EVOLVED AND SUCCEEDED?

FEMA has sponsored the development of HAZUS loss estimation modelling since 1993. HAZUS software was released to the public in 1997. The BAHUG, the first HAZUS User Group, was formed in 1997 and remains operational today. BAHUG was formed to use HAZUS to create a risk assessment, develop mitigation plans, and reduce loss of life and property during a major earthquake. BAHUG was created as a grassroots effort. FEMA Region IX championed the effort, and secured funding for a project coordinator to facilitate public outreach and meeting coordination, and a graphic designer to assist with developing marketing materials.

To initiate BAHUG, the leaders examined a number of organizations to identify various approaches to data management, use of software, and risk management. Project leaders conducted community outreach to attract public and private sector representatives to introduce, promote, and

HAZUS User Groups and projects are not one size-fits-all
In New York state, the HAZUS Working Group focuses on collecting data and conducting vulnerability scenarios.

In Hampton, New Hampshire, a project funded by FEMA Region I focuses on HAZUS training, and scenario development.

The BAHUG

Project Vision

Eleven counties accomplishing more together than could any single entity to build more earthquake-resistant communities.

Project Goal

Reduce the loss of life and property after the next major earthquake in the San Francisco Bay Area.

Project Mission

- Implement FEMA's HAZUS earthquake loss- estimation software in the San Francisco Bay Area.
- Develop partnerships with national research laboratories, universities, corporations, utilities and nonprofit organizations as well as federal, state and local governments.
- Use results from HAZUS to generate earthquake studies.
- Organize the HAZUS User Group to use HAZUS and share results from HAZUS scenario exercises and response situations.
- Share project successes nationwide.

BAHUG counties

Project Accomplishments

- Leadership and organization
- HAZUS training and technical support
- Outreach and public/private partnerships
- Website and pilot projects for earthquake reduction

Points of Contact

Project Lead
Federal Emergency Management Agency, Region IX
Phone: 415-923-7193

Bottom Line

The BAHUG implementation model has shown that the HAZUS software tool, coupled with a credible earthquake threat, can form an invaluable and wide-reaching partnership of GIS professionals, earthquake experts and risk managers at all levels of public and private organizations.

implement HAZUS as a standard earthquake risk assessment tool in the San Francisco Bay Area. Representatives of 11 counties volunteered to participate in the BAHUG.

Successes of the BAHUG include:

- Develop and implement HAZUS training for User Group members,
- Develop collaborative partnerships between public sector organizations and private sector,
- Encourage widespread acceptance and use of HAZUS as a risk management tool.

HOW DOES A HAZUS USER GROUP SUPPORT MITIGATION PLANNING?

All members of a community are disrupted during a disaster. For that reason, all organizations have a stake in disaster planning and mitigation efforts.

HAZUS User Groups are formed to reduce the risk of loss and respond to natural hazards by combining the resources of public and private organizations. Each HAZUS User Group needs to formulate and document its vision, mission, goals, and objectives.

Public- and private-sector members of a HAZUS User Group should develop a hazard mitigation plan by tapping into the capabilities of the powerful HAZUS tool (see table on page 1-6). HAZUS can be used to develop "what-if" scenarios based on various alternatives, mitigation options, and strategies, allowing emergency managers, risk managers and elected officials to make more informed decisions.

Once a HAZUS User Group has been formed, its members can support the following types of mitigation planning actions.

1. Organize people and resources
2. Assess risks using the HAZUS tool
3. Develop a hazard mitigation plan
4. Implement the plan and monitor its progress

Partnership in action

Participation in the BAHUG was the catalyst for the relationship formed between the City of San Francisco and Charles Schwab and Co., Inc. These organizations worked together to conduct an earthquake response emergency operations center (EOC) exercise.

HAZUS scenarios were run to support the exercise that activated more than 50 people at the EOC. HAZUS was run three ways:

- Live at the San Francisco Office of Emergency Services (OES) emergency operations center GIS system to work out systems issues
- Offline at Charles Schwab, Inc. to image simulated ground motion from the specified event and generate large-format maps
- Offline by OES to estimate a variety of effects such as casualties, shelter needs, fires, and localized damage in the districts of San Francisco

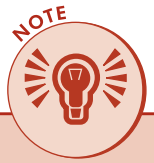
Casualty estimates from HAZUS were passed to the EOC's amateur radio communication team at various times during the exercise, and that information was distributed to teams in the EOC and recorded in status reports. While many aspects of the simulation exercise are familiar to well-prepared EOCs , the use of loss estimates provided by HAZUS in this context helped ensure that credible levels of loss and damage were being conveyed to the teams for the chosen earthquake scenario.

WHAT PRODUCTS CAN A HAZUS USER GROUP CREATE?

HAZUS User Groups can produce a variety of products, including:

- Maps and reports of modeled loss estimates,
- Exercises: Realistic scenarios can drive exercises and responses to actual events,
- Pilot projects: To understand losses and potential damage caused by natural hazard events,
- Risk assessments: Comprehensive risk assessments help in setting priorities among mitigation projects.

In some instances, proprietary or locally sensitive data may be used to run a HAZUS scenario. However, once the data have been entered into HAZUS, the results of the scenario can be shared among members of the HAZUS User Group and other interested parties for a variety of purposes without releasing sensitive information to the public (see map on page 1-9).



Mitigation Planning Requirements

Under interim final regulation found at 44 CFR at 206.1, natural hazard mitigation planning is required as a condition for receiving post-disaster hazard mitigation funds. FEMA supports the preparation of regional, state, and local mitigation planning through reports, tools, and technical assistance.

How HAZUS Users Groups Support Mitigation Planning

1 – Organize People and Resources

- Identify the affected area
- Identify stakeholders
- Identify issues for stakeholders
- Motivate stakeholders to participate in the planning effort
- Conduct planning and identify resources and expertise

Result: an increase in public awareness of the threats posed by earthquakes, floods or hurricanes and their consequences and political understanding of and support for hazard mitigation.

2 – Assess Risks Using the HAZUS Tool

Run HAZUS risk assessments to obtain the following types of information:

- Intensity of ground shaking motion and failure
- Building losses by structure type
- Damage to utility and transportation systems and recovery time
- Direct and indirect economic losses
- Impact on critical facilities
- Casualties and shelter needs
- Fire ignitions
- Amount and location of debris

Result: an understanding of the relative risk, planning, siting and access issues associated with a specific hazard scenario.

3 – Develop a Hazard Mitigation Plan

- Develop risk scenarios using HAZUS data
- Set the priorities of the mitigation program
- Form realistic mitigation goals

Result: an effective hazard mitigation plan that can be achieved through use of the talents and resources of both the public and private sectors.

4- Implement the Plan and Monitor Its Progress

- Implement the mitigation plan
- Monitor the progress of the plan

Result:

- Saves time
- Helps speed delivery of resources through modeled loss estimates
- Speeds response and recovery
- Provides a quick situation assessment
- Saves lives
- Speeds urban search and rescue
- Defines response priorities
- Saves dollars
- Defines early loss estimates
- Supports deployment of proper resources
- Reduces property losses
- Provides input to mitigation strategies for decision makers
- Models impacts of earthquake risk reduction strategies
- Demonstrates effects of building code administration
- Illustrates effects of effective land use planning
- Yields operational response modeling results
- Enhances planning and partnerships
- Provides planning exercise scenarios
- Provides criteria for establishing more sustainable communities

Process

1. Organize People and Resources
2. Access Risks Using the HAZUS Tool
3. Develop a Hazard Mitigation Plan
4. Implement the Plan and Monitor Its Progress

Targeted Outputs of HAZUS

Uses of HAZUS	Audience	Output
1. Raise public awareness of the threats posed by an earthquake, flood, and hurricane and its consequences	General public, elected officials, emergency managers, and land use planners	Casualties and economic loss
2. Create political understanding and build constituencies	General public elected officials, emergency managers, and land use planners	Disruption of utility service, damage to regional transportation systems and dollar loss
3. Understand relative risk, planning, siting, and access issues	Land use planners, regional agencies, growth management agencies, and utilities	Peak ground acceleration (PGA), peak ground velocity (PGV), and peak ground deformation (PGD)
4. Understand the extent of injuries and fatalities	Medical agencies, emergency managers, risk managers, and first responders	Casualties by structure type
5. Assess the performance of emergency shelters	Land use planners, risk managers, and emergency planners	Structural damage
6. Assess the performance of fire stations	Fire officials, emergency managers, and planners	Number of ignitions, area burned, damage to essential facilities, and damage to water utilities
7. Identify the vulnerability of infrastructures	Utility companies, emergency planners, and transportation agencies	Damage to and recovery of utilities and damage to transportation systems
8. Understand overall damage to buildings	Land use planners, elected officials, first responders, and emergency and facility managers	Damage by building type and location, and damage to utilities and transportation systems
9. Set priorities for the mitigation program	Land use planners, risk managers, and fire safety officials	Multiple runs of building damage

HAZUS data update

HAZUS will be updated in late 2002 to include census data from 2000. The HAZUS flood module will be released in late 2002 and the wind modules in 2003.

WHY CREATE A HAZUS USER GROUP?

A HAZUS User Group should be created when there is a gap between the current capabilities of hazard mitigation and response, and what would exist with the formation of a HAZUS User Group. Such groups should fulfill a need. The rationales for forming and participating in a HAZUS User Group are numerous and extend to both public and private organizations. You will find that the benefits of a HAZUS User Group will exceed beyond your initial expectations. By pooling the talents of GIS professionals, risk managers, contingency planners, and natural hazard experts from the public and private sectors, you will be able to:

Operational uses of HAZUS

HAZUS got its first test in 1999 during a 7.1 magnitude earthquake that hit a sparsely populated desert area in Southern California. FEMA officials say within three hours the software provided extremely accurate estimates of the damages, economic losses, possible deaths and injuries and shelter requirements. Another test came last year during a 5.2 earthquake in California's Napa Valley.

"Most of our experiences have come from California," said Stuart Nishenko, [a] senior seismologist at FEMA. "The Seattle quake [Nisqually] gives us a different kind of quake."..." Given the time and the magnitude, it told us we had a major disaster on our hands," he said. "It allowed us to move quickly to send a declaration (of disaster)."

Source: Excerpt from Seattle Times, Monday, March 05, 2001
By S. Kelleher and R. Rivera

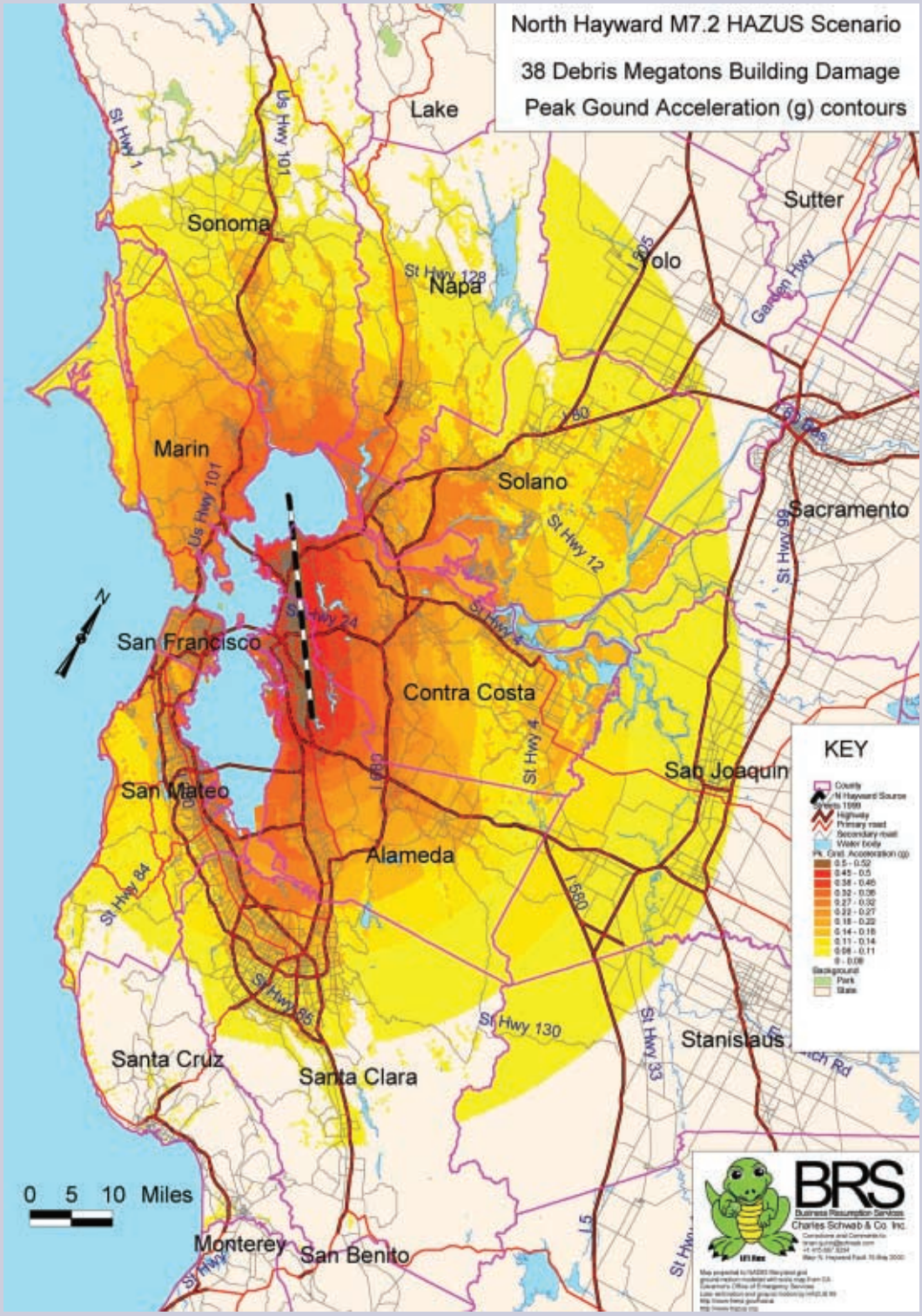
Members of the BAHUG in both the private and public sectors have conducted HAZUS pilot projects Staff from Charles Schwab have used HAZUS to apply GIS technology to business contingency planning. According to one staff member, "Corporate HAZUS users may be involved with the rigorous construction of business recovery plans. HAZUS provides useful customizable scenarios that enhance the credibility of putative disasters used to motivate those who write business continuity plans. Businesses often create disaster response teams with certain employees taking on responsibility for aspects of emergency operations. HAZUS scenarios can help these teams identify employees with common exposure to certain hazards such as earthquake faults, and communicate this graphically to the team, so that they can make prudent choices for alternate responders. Employee awareness is enhanced with scenarios that impact the employee's own neighborhood."

- Use HAZUS for earthquake, hurricane, and flood scenarios to meet the risk mitigation needs of various organizations (see map on page 1-9)
- Use resources more efficiently by achieving economies of scale
- Develop relationships and mechanisms to share ideas and information
- Contribute to improvements in hazard mitigation, response, and planning activities
- Increase awareness of other organizations' capabilities.

User Group members benefit from participation

According to staff from the City and County of San Francisco, the BAHUG's use of HAZUS aids in their earthquake mitigation efforts and reduces the need for post-disaster support from FEMA. Wells Fargo personnel say the BAHUG is a great resource for HAZUS and they benefit from collaboration on earthquake hazard reduction efforts.

HAZUS scenario output map



WHEN AND WHERE TO ESTABLISH A HAZUS USER GROUP 2

WHAT THINGS SHOULD YOU CONSIDER?

There are many things for you to consider as you decide when and where to establish a HAZUS User Group. You should consider addressing the following questions when you create a HAZUS User Group.

- What hazards are addressed?
- What is the regional awareness of those hazards?
- What are the GIS resources in the region?
- What existing regional partnerships are in place?
- What support will "champions" receive from their respective organizations?
- What kinds of economic resources are available?

A snapshot – HAZUS User Groups currently operating throughout the country

- Hawaii HAZUS User Group (HIHUG)
- Nevada HAZUS User Group (NVHUG)
- New England HAZUS User Group (New England HUG)
- New York City Area Consortium for Earthquake Mitigation (NYCEM)
- Lewis & Clark County, Montana HAZUS User Group (Big Sky HUG)
- Oregon HAZUS User Group (ORHUG)
- Salt Lake City HAZUS User Group (Salt Lake HUG)
- San Francisco Bay HAZUS User Group (BAHUG)
- Southern California HAZUS User Group (SoCalHUG)
- State of Washington HAZUS User Group (WAHUG)

More groups are forming, see FEMA HAZUS web site for up-to-date information.

WHAT HAZARDS ARE ADDRESSED?

HAZUS User Groups can be formed to address natural hazards including earthquake, flood, or hurricane hazard scenarios. In addition, data can be imported into HAZUS to expand the scope of hazard risk assessments. Major initiatives that use HAZUS are underway in many parts of the country, and more groups are forming. Updates on these groups can be found at the FEMA HAZUS web site.

Form User Groups around hazards

Staff of the Western States Seismic Policy Council recommend organizing a HAZUS User Group around a common hazard scenario, regardless of regional boundaries.

WHAT IS THE REGIONAL AWARENESS OF THOSE HAZARDS?

A significant regional hazard awareness will make it easier to secure funding for and participation in a HAZUS User Group. The earthquake threat in the San Francisco Bay Area is well recognized by the public and private sectors. Those factors made it relatively easy to gain support for the BAHUG.

For more information on past and current HAZUS applications visit HAZUS web site at <www.fema.gov/hazus>. Additional key resources are listed in Chapter 3.

WHAT ARE THE GIS RESOURCES IN THE REGION?

Because HAZUS uses GIS technology, you must tap into GIS resources in your region, regardless of which hazards you are addressing. Earthquake and hurricane hazard mitigation focuses on management

of building codes, while flood hazard mitigation focuses on land use management. Although GIS technology is used widely for land use management, GIS is a somewhat new technology for management of building codes. Because of the existence, structure, and strength of the Association of State Floodplain Managers (ASFPM) and the routine use of GIS in flood hazard mitigation, the flood community is an ideal candidate for using HAZUS. According to staff of ASFPM, the flood community should focus on how HAZUS can be used to create model scenarios that show no adverse impact. The HAZUS flood model developer encourages working through the existing networks of GIS users in the flood community when forming HAZUS User Groups.

HAZUS can receive vital data within minutes of an earthquake in southern California

TriNet is a multi-functional seismic network for earthquake research, monitoring, and computerized alerts. The network is a cooperative project of the U.S. Geological Survey, the California Institute of Technology, and the California Division of Mines and Geology. TriNet is a collaborative project that focuses on creating an effective real-time earthquake information system for southern California. TriNet provides continuous monitoring of seismicity and ground shaking in Southern California. The monitoring produces rapid estimates of the times, locations, and magnitudes of earthquakes. The high density and quality of stations in the network provide direct estimates of the strength of ground shaking near earthquakes. In an actual earthquake event, HAZUS will automatically receive data on the event from the network and the California Office of Emergency Service (OES) and run an analysis based on those data. The results will serve as the first official estimates of damage and loss within minutes of an earthquake.

WHAT EXISTING REGIONAL PARTNERSHIPS ARE IN PLACE?

Tapping into the resources of existing public and private partnerships and risk management organizations is essential to the formation and growth of a HAZUS User Group. Organizations such as the Business Recovery Managers Association (BRMA), the Bay Area Automated Mapping Association (BAAMA), and ASFPM have established networks and often are interested in supporting a HAZUS User Group. The local focus of a HAZUS User Group may be challenging to national businesses, because such businesses may not have the resources to participate in multiple local groups. Each HAZUS User Group should consider the needs of its region and stakeholders and should be ready to explain the regional benefits derived from joining a HAZUS User Group and performing a HAZUS study at a regional level.

Leverage existing relationships

Tap into resources of existing public-private partnerships and risk management organizations to further leverage current resources.

WHAT SUPPORT WILL "CHAMPIONS" RECEIVE FROM THEIR RESPECTIVE ORGANIZATIONS?

It is essential that the organization attempting to create the HAZUS User Group be prepared to commit time and resources to the effort to form and implement the group. That lead organization must have a vision for the goals and objectives of the HAZUS User Group and must convey those concepts to the HAZUS User Group through the "champion." It is not necessary or even recommended that the lead organization have a defined mission statement or strategic plan that guides overall activities for the HAZUS User Group. HAZUS

applications elements instead must be formed by consensus of the partner organizations that form the HAZUS User Group. Remember, the goal is to meet the strategic objectives of your organization and the other organizations, not to control the process of creating the group.

HAZUS User Groups thrive on consensus
A "champion" does not define a HAZUS User Group strategic plan, a "champion" guides the planning process to reach consensus among the group's participants.

WHAT KINDS OF RESOURCES ARE AVAILABLE?

FEMA supports regional HAZUS User Groups and HAZUS projects and can be an invaluable resource of information. Financial support also can be obtained from participants in the group through cash contributions or in-kind donations such as meeting facilities and refreshments. You can read more about funding issues in Chapter 3, under Step 6, Seek and Secure Funding.

WHAT STEPS SHOULD YOU TAKE?

To create a successful HAZUS User Group, you must combine the HAZUS software technology with human resources and an effective organizational structure. The following steps will help you achieve that goal:

1. Identify stakeholders
2. Conduct outreach to stakeholders
3. Form a steering committee
4. Conduct public meetings
5. Provide HAZUS training
6. Seek and secure funding
7. Develop a strategic plan
8. Distribute marketing materials

Key Resources for HAZUS User Groups

HAZUS information
<http://www.fema.gov/hazus>

HAZUS User Group web site
<http://www.hazus.org>

HAZUS help line
(800) 955-9442
<http://www.HAZUSHEALP@durtech.com>

Step 1 - Identify Stakeholders

Once you have decided to form a HAZUS User Group, the next step is to identify potential members and create a plan for approaching them. First, consider the objectives of the HAZUS User Group

Types of HAZUS User Group Stakeholders

Public Partners

Federal Government

- United States (U.S.) Department of Agriculture
- U.S. Department of Commerce
- U.S. Department of Defense
- U.S. Department of Education
- U.S. Department of Energy
- U.S. Environmental Protection Agency
- Federal Emergency Management Agency
- U.S. Department of Health and Human Services
- U.S. Department of Housing and Urban Development
- U.S. Department of Interior
- U.S. Small Business Administration
- U.S. Department of Transportation

State Government

- Construction
- Economic development
- Education
- Environmental management
- Health and safety
- Public safety
- Fire
- Emergency management
- Police
- Housing
- Insurance
- Legislature and elected officials
- Office of the Governor
- School boards
- Transportation
- Zoning

Local Government

- Education
- Environment
- Housing
- Transportation
- Utilities
- Gas
- Water and sewer
- Electricity
- Telephone service

Private Partners

- Cable providers
- Business associations
- Chambers of commerce
- Civic organizations
- Consultants
- Religious groups
- Parent-teachers association
- Public interest groups
- Education
- Colleges and universities
- Private schools
- Vocational schools
- Health care providers
- Hospitals
- Emergency medical services
- Law firms
- Medical clinics
- Media
  - Print
  - Radio
  - Television
- Nonprofit organizations
- Charitable trusts
- Community foundations
- Private sector
- Financial institutions
- Insurance agencies
- Large local, regional, and national businesses
- Refineries or nuclear plants
- Risk management consultants
- Unions

and make a list of organizations in the public and private sectors that may be interested in those overall objectives. Note that potential members may be located outside the jurisdiction of the HAZUS User Group but still benefit from the work of the group; they therefore may be interested in participating.

Look for complementary capabilities

As you form a list of possible members, seek to identify organizations that possess resources that supplement your own organization's capabilities.

Review your list of potential members and contact a few people in those organizations with whom you already have a relationship. Discuss your vision for a HAZUS User Group with them, solicit their "buy–in," and encourage them to spread the word. As a leader, you must empower the people in the group to develop a commitment to the goals of the group and take the initiative in working to reach those goals. They will be more committed if they can recruit other like-minded organizations and if they have a voice in the group, as well.

Key Roles in the HAZUS User Group

Forming a HAZUS User Group takes the motivation of a "champion," and maintaining and expanding a HAZUS User Group takes the motivation and work of the membership. Leaders will emerge within a HAZUS User Group, assuming that the champion has recruited the right mix of people and nurtured their involvement in the group. A champion or project leader cannot fill all the roles necessary to manage a HAZUS User Group. That person will need support through communication, management, education, leadership, marketing, technical, and political support.

Potential flood stakeholders

- Emergency response and recovery managers
- Natural Resource Conservation Service
- Local medical, police, fire and rescue organizations
- Local public works departments
- Floodplain managers and mitigation planners
- State water resources departments and dam safety agencies
- State coastal zone managers
- Regional flood control districts
- Regional watershed and levee districts
- Land use planners
- Bureau of Land Management
- U.S. Forest Service
- State land trusts
- Local planning and zoning departments
- Private landowners
- Natural resources and environmental planners
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- State forestry and conservation departments
- Parks and recreation departments
- Weather and flood forecasters
- National Oceanic and Atmospheric Administration
- National Weather Service
- State climatologists
- Flood warning network managers
- Insurance professionals
- U.S. Department of Agriculture

HAZUS User Groups do more than run HAZUS; they use HAZUS to run hazard scenarios that improve mitigation, preparedness, response, and recovery. Beyond the administration of a HAZUS User Group, key roles must be filled to meet the objectives of the group. Within this framework, each type of user is essential to meet the objectives of a HAZUS User Group.

When attempting to gain access to the resources of member organizations, government organizations have the mandate to respond to, to protect against, and to prevent disasters related to natural hazards. Such organizations therefore are a complementary fit for any HAZUS User Group. Individuals representing a relevant government organization can justify the time they spend participating in a HAZUS User Group because it coincides with the objectives of their organizations.

Private sector may approach a HAZUS User Group with a business continuity focus. Private sector accounts for time spent on each activity with a return on investment. Because HAZUS User Groups must create a "win-win" situation for all members, the HAZUS User Group project leader must ensure that each member is armed with sufficient information to justify that member's participation or investment in the HAZUS User Group.

HAZUS User Group Key Roles

Data developers:	
Department of public works manager, county official, floodplain manager, and building code official	*Collect and contribute data on the project area.*
Data manipulators:	
GIS professional, and operator of HAZUS software	*Run HAZUS and compile and use the data collected by the data developers.*
Data interpreters:	
Engineer, consultant, floodplain manager, and building code official	*Analyze the results of a HAZUS run.*
Users of data in decision making:	
Political leader, executive, risk manager, floodplain manager, mitigation planner, and building code official	*Use the results of a HAZUS run to establish priorities for mitigation projects and response and recovery operations.*

Step 2 - Conduct Outreach to Stakeholders

You can approach stakeholders in many ways. While the HAZUS User Group is under development, contact people by phone or in person. As the HAZUS User Group grows, you can send e-mail or a marketing brochure. When you contact someone, explain the group's vision and then do a lot of listening. Remember, a HAZUS User Group is a partnership, a relationship among people, and people feel better when they participate in conversation and when their perspective is heard. As more people join the HAZUS User Group, the lead agency or organization must encourage those individuals to recruit additional people. Doing so reduces the burden on the lead agency or organization for not only reaching out to people, but also researching whom to contact.

Within the BAHUG, leaders stepped forward to fill several roles

The executive director of the Western Disaster Center created and maintains the web site <http://www.hazus.org> . The site has been used to further the outreach of the BAHUG, promote HAZUS and the formation of other HAZUS User Groups, and maintain communication among all members of the BAHUG. The California Office of Emergency Services (OES) has supported the BAHUG by hosting meetings, printing materials, and offering extensive technical support.

Step 3 - Form a Steering Committee

Once you begin to form your HAZUS User Group and the word spreads among stakeholders, you must establish a steering committee to help ensure that your messages do not become distorted. Identify approximately 6 to 10 individuals who represent both the public and the private sectors and invite them to a meeting to discuss the formation of the HAZUS User

Group. A face-to-face meeting will give the group the opportunity to ask and answer questions about the vision of the HAZUS User Group. Invite the individuals to serve as the members of the steering committee.

Get the word out on objectives and benefits

For the BAHUG, the project coordinator created PowerPoint presentations targeted to utilities, governments, and private sector that highlighted the objectives of the BAHUG and the benefits of participation in it. Members had access to the presentations on the hazus.org web site.

At the first meeting of the steering committee, establish a sense of need and direction. That direction should support the purpose and mission of the stakeholders' organizations. Encourage the members of the steering committee to assist in the leadership and growth of the HAZUS User Group. Encourage them at this first meeting to take ownership of the project. The goal for the initial meeting should be to gain the support of the members of the committee for the HAZUS User Group, agree on the basic vision of the group, and instill in the group a sense of urgency and empowerment. The urgency and empowerment that they feel should lead them to take the initiative to assist in managing and promoting the growth of the group. Begin to plan an initial meeting of stakeholders, as well.

Initiative + Credibility = Success

The BAHUG began with a meeting between FEMA and the California OES. It was FEMA's initiative that created the group. The support of CA OES brought immediate credibility to the effort. When discussing the partnership idea with other stakeholders, it was helpful to have the support of a well regarded state organization.

Step 4 - Conduct Public Meetings

Depending upon the amount of time you have, you may wish to allow at least one month between the decision to form a HAZUS User Group and the first open meeting of stakeholders. The members of the steering committee can assist in recruiting stakeholders to participate in the public meeting. Conduct most of the planning and organization of the meeting yourself. At this stage in the development of the partnership, it is still "your baby," and you should host the meeting.

Attempt to maintain a high level of energy at your public meeting. Plan to have an agenda that includes several presentations that discuss the problems that the HAZUS User Group will address. You may consider including presentations from different types of organizations so that a variety of perspectives are represented. Allow

The BAHUG Steering Committee

Project lead, regional earthquake specialist, FEMA Region IX
Project coordinator, FEMA contractor, Jamie Caplan Consulting
Executive director, Western Disaster Center
Seismologist, U.S. Geological Survey
Associate professor, GIS laboratory, San Francisco State University
Associate specialist, University of California at Berkeley Seismological Laboratory
Associate director, John Blume Earthquake Engineering Center, Stanford University
Seismic program manager, Hewlett Packard, Inc.
GIS programmer analyst, California OES
Chief engineer, Bechtel Corporation
Special assistant, Mayor's Office of Emergency Services, San Francisco
Earthquake program manager, Association of Bay Area Governments
Science writer, San Francisco Chronicle
California Universities for Research in Earthquake Engineering
Assistant director, Disaster Services, American Red Cross Bay Area
Co-Director, Hazard Mitigation Center, Lawrence Livermore National Laboratory
Outreach coordinator, California Seismic Hazards Mapping, California Department of Conservation, D Division of Mines and Geology
Supervising GIS programmer, East Bay Municipal Utility District
Consumer news editor, Fox KTVU Channel 2

plenty of time for participants to introduce themselves to the group and describe their vision for the group. Allow time for networking and discussion. Conclude the meeting with a commitment to host a second meeting, and encourage all participants to recruit additional stakeholders for the group.

It is essential to prepare a handout folder for each meeting. The folder should include the meeting agenda, your contact information and the contact information for other HAZUS User Group leaders, as well as other interesting material about the problems the HAZUS User Group will address. You also should prepare nametags for participants in all meetings and give them evaluation forms. Use the

The BAHUG tapped a diverse audience with a common interest

During the first meeting of the BAHUG, approximately 80 people attended, representing federal, state, and local government, as well as private sector, nonprofit organizations, utilities, and universities. At the meeting, several people commented that they never before had been in a room with so many people who shared their interest in earthquake mitigation but represented such a diverse group of organizations.

Example of Public Meeting Announcement

Southern California Earthquake Center, California Office of Emergency Services, and the Federal Emergency Management Agency announce the formation of the

Southern California HAZUS User Group

Objectives

CREATE a comprehensive HAZUS earthquake risk assessment.
NETWORK risk managers, GIS professionals and earthquake experts.
TRAIN GIS professionals in HAZUS earthquake loss estimation software.
IMPROVE earthquake databases and building inventories.
DEVELOP and exercise emergency management protocol for response.
DEMONSTRATE the process by which other regions can develop HAZUS application projects.

"SoCalHUG" Kickoff Meeting

April 26, 2001
9am - 4 pm

707 Wilshire Blvd
Downtown Los Angeles

Presentations and discussion about HAZUS and SoCalHUG activities and opportunities

For information and to RSVP, e-mail jcaplan@mediaone.net

Join a public-private partnership to reduce earthquake losses.

Membership is free. To join, contact

Mark Benthien
Southern California Earthquake Center
213-740-0323
benthien@usc.edu

Jamie Caplan
HUG Project Coordinator
413-586-4762
jcaplan@mediaone.net

www.hazus.org

You must create a database of HAZUS User Group members

Include their complete contact information, identify the meetings they have attended, and document their perspectives on the problems that the HAZUS User Group addresses. Be prepared to expand the database regularly to include additional information.

evaluation forms to obtain additional information about participants' perspectives on the vision of the HAZUS User Group, the problems it will address, and their levels of expertise. The folder of information brings a level of professionalism to the meeting and also may serve as a tool members can use to justify their participation in the HAZUS User Group to their supervisors.

Following public meetings, it is essential to prepare minutes. Distribute the minutes with a list of all participants, as well as interested stakeholders who were unable to attend the meeting. It is extremely important to distribute the meeting minutes within about two weeks of the meeting. Include tasks for stakeholders in the minutes. Keeping them involved in the group strengthens the group and reduces your burden of leadership. Using electronic mail to communicate with partners works well, but do not forget to pick up the telephone on occasion — you are building personal relationships.

Send the meeting minutes to your supervisor and your peers. Devote a significant amount of energy to marketing the HAZUS User Group internally within your organization. Encourage the stakeholders joining the HAZUS User Group to do the same. Remember, individuals join the HAZUS User Group, but they represent organizations and they must have the support of those organizations to participate on an ongoing basis.

Step 5 - Provide HAZUS Training

BAHUG members were motivated by the power of the partnership experience

When the BAHUG was formed, HAZUS was still in its infancy, and very few people in the region were aware of the technology. Even fewer had received training. The leaders of the BAHUG used the offer of free training and software as a carrot to entice people to join the BAHUG. However, it has been identified that one of the main motivations for joining the group was the opportunity to network with public and private organizations. Another motivation was the focus of the group on mitigating the risks posed by earthquakes in the region.

When you decide to form a HAZUS User Group, you must consider the need to provide training. HAZUS training opportunities are available through FEMA at the Emergency Management Institute (EMI), located on the campus of the National Emergency Training Center in Emmitsburg, Maryland. EMI offers two HAZUS training classes. The first is a basic class. It gives participants an introduction to the software and shows them how to perform basic tasks using default data. The second course is "Using HAZUS in Mitigation Planning." This course familiarizes communities and networks on how HAZUS main applications and outcomes can be effectively applied to mitigation planning. For more information about training available from EMI, visit FEMA's training web site at <http://training.fema.gov>.

The BAHUG created a course entitled "Advanced HAZUS Training." The course differs from the basic course offered by FEMA because it uses region-specific examples, it is taught in the region of the HAZUS User Group, and it covers some advanced techniques. The course can be modified and taught at the regional level in all areas in which HAZUS User Groups are formed. The BAHUG model illustrates the effectiveness and importance of regional training. Customizing training for the region and the audience and bringing that training to the region eases the burden on potential users.

Technical support is available to you

FEMA provides HAZUS technical support, which can be accessed at (800) 955-9442. Frequently, the relationships formed within a HAZUS User Group will develop local technical support contacts. For example, in the BAHUG, several HAZUS "gurus" have emerged and offer their support to anyone in the region. Other 800 numbers will be available when the flood and wind modules are released

It has been demonstrated that the HAZUS user community is diverse. The need for customized training is essential and will continue to be varied in terms of:

- Geographic location, based on natural hazard areas (earthquake, flood, or hurricane)
- Varied organizations with similar goal of risk reduction
- Role of the users and their level of knowledge and interest in HAZUS and GIS

Look for HAZUS training enhancements

FEMA is enhancing its HAZUS training and technical assistance programs to adapt to the needs of a diverse and changing audience.

Several training courses are available from FEMA that can be delivered regionally by HAZUS User Groups. An "Advance HAZUS Training Course" developed by Region IX presents key principles for creating networks and user support groups as well as enhances GIS professionals' knowledge of HAZUS software and applications. A "HAZUS Mitigation Planning" course presents information on how to reduce loss of life and property, prepare mitigation programs, and implement actions related to response and recovery. A "Multihazard Inventory Course for HAZUS" identifies and facilitates more effective methods and tools for local multihazard data collection, thereby increasing the value of HAZUS to its user community.

The BAHUG has sought and continues to seek sources of funding

In the past, FEMA has allocated money for a project coordinator, a graphic designer, development and printing of marketing materials, and HAZUS training.

To date, each of the meetings of the BAHUG has been held in a donated meeting space. The Golden Gate National Recreation Area, Compaq Computer Corporation, Charles Schwab, and Wells Fargo all have donated meeting facilities. Meeting participants have funded refreshments through nominal registration fees.

Step 6 - Seek and Secure Funding

It costs money to create and maintain HAZUS User Groups. The costs associated with HAZUS User Groups that cannot be absorbed by members pose challenges. Producing marketing materials and documents for meetings requires funding. A lead organization should budget for

the first six months to one year of maintaining a HAZUS User Group; costs will fluctuate depending on the size of the user groups and local needs. The leadership of the group must consistently seek the financial support of the members of the group. Such support can take the form of in-kind donations, such as meeting space, refreshments, or printing.

To obtain financial support, it is essential to demonstrate need and clearly express the vision, mission, goals, and objectives of the partnership. When asking partners to contribute, emphasize how their organizations will benefit directly. Then ask for in-kind donations or financial support. Leaders may emerge in a HAZUS User Group to form committees or perform other tasks, but no one will offer financial support until it is made clear that there is a need and people are asked to help. Educate the membership about the costs of creating and managing the group and increasing its membership.

The BAHUG Strategic Plan guided the group

To write the strategic plan for the BAHUG, the project coordinator organized several meetings and solicited opinions from the group as a whole, as well as the leaders of the group. The project coordinator drafted a plan based on information collected through meetings and interviews. The plan was distributed and revised in light of the comments of the group's leadership. The strategic plan has helped to guide the work of the group, as well as to justify the existence of the group to FEMA and other organizations.

Step 7 - Develop a Strategic Plan

Taking the time to write a strategic plan is well worth the effort. The process of strategic planning will lead the partnership to consensus. The documented plan can be used as a marketing tool, as well as a guideline for the partnership. The plan should reflect the partnership's priorities, resources, and mitigation measures. The plan also will document clearly the intended products of the partnership. Strategic plans also may be helpful in securing funding and in justifying the existence of the group.

Include in the strategic plan methods of retaining members and measuring group performance. Survey group members regularly to gather information about their needs and concerns. Also, seek to communicate the progress made toward reaching goals stated in the strategic plan. Communicate effectively with members to retain their participation and commitment. Marketing tools such as press releases, newsletters, electronic mail announcements, brochures, and PowerPoint presentations are proven methods of effective communication. Make sure to state long-, mid-, and short-term goals for human and economic resources.

Communicate

Press releases, newsletters, electronic mail announcements, brochures, and PowerPoint presentations have proven to be effective methods of communication for HAZUS User Groups.

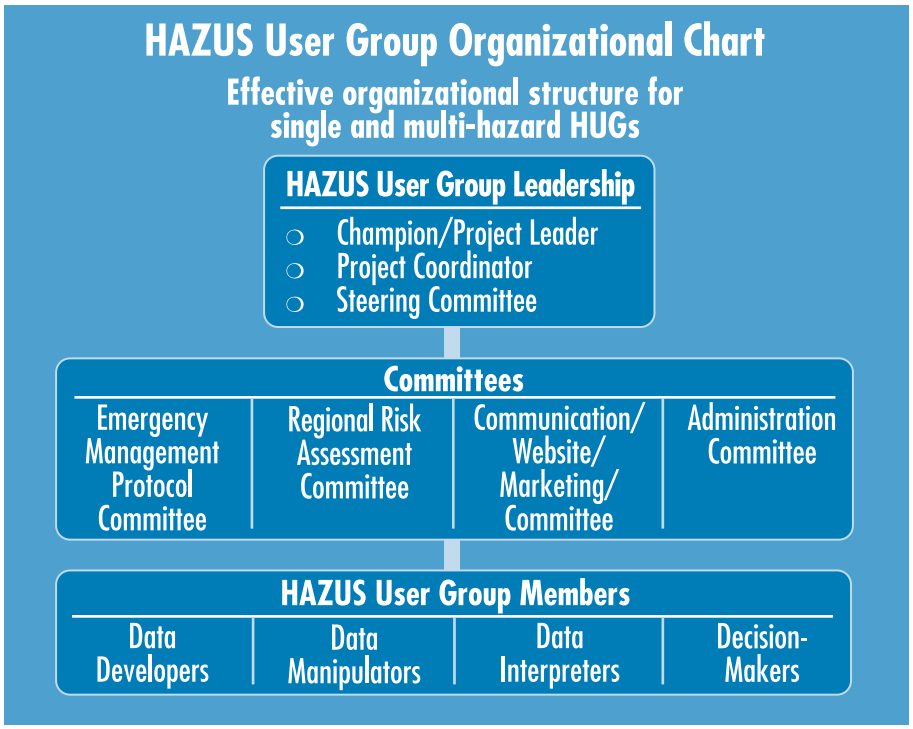
Identify the Organizational Structure for Your HAZUS User Group

Although a HAZUS User Group can focus on a single hazard or multiple hazards, the basic structure of a HAZUS User Group does not vary. When preparing your strategic plan, keep in mind the organizational structure of your HAZUS User Group. Multiple-hazard HAZUS User Groups and single-hazard HAZUS User Groups all require a project leader, a project coordinator and a steering committee. Experience indicates that HAZUS User Groups tend to have four interrelated areas of focus:

1. Emergency management protocol
2. Regional risk assessment
3. Communication
4. Administration

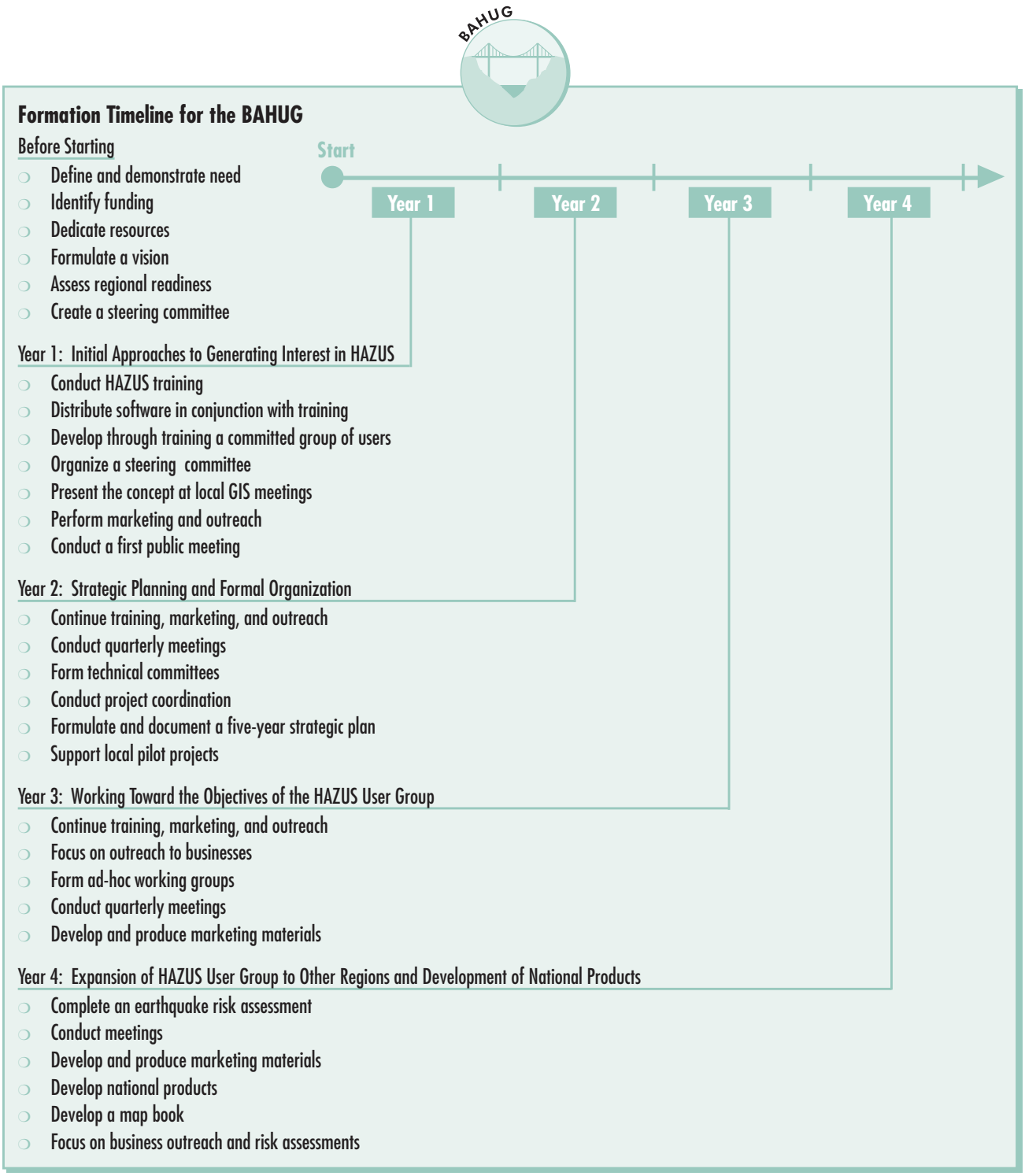
For different areas of interest and focus, form technical comittees and plan to conduct meetings with these groups. Form these committees as needed. During these meetings, encourage the members to take ownership of the projects and to promote and direct studies that meet their defined needs.

In addition, multiple-hazard HAZUS User Groups may require more committees and members to ensure that each hazard is considered sufficiently.



Prepare a Timeline for Your HAZUS User Group

Your strategic plan also should include a timeline that sets forth projected group activities and milestones. The timeline forms a "road map" for the group and should be consulted and amended as your group gains experience.



Step 8 - Distribute Outreach Materials

Seek to communicate the clearly defined vision, mission, goals, and objectives of your HAZUS User Group. You should use outreach materials to communicate success, publicly thank members and their organizations and to recruit additional members to the group.

You should focus outreach efforts internally on members of the HAZUS User Group, as well as on an external audience to solicit new members. A HAZUS User Group brochure is available on the HAZUS web site and can be tailored to promote the formation of a HAZUS User Group. In addition, your regional outreach materials such as the exhibit booth, are available from FEMA to support efforts.

BAHUG conference booth, illustrating brochures, posters, and handouts developed for the BAHUG

Outreach Activities of the HAZUS User Group

Outreach focus	Purpose	Forms of activities
Internal to HAZUS User Group members and their organizations	Maintain effective communication Communicate progress and success Publicly thank HAZUS User Group members Continue organizational support	Written reports Graphic presentations Newsletters Web site Strategic plan
External to HAZUS User Group	Solicit additional members of the HAZUS User Group Solicit funding Obtain public support for the activities of the HAZUS User Group	Brochures Newsletters Web site Graphic presentations Press releases Speaking engagements

WHAT ARE THE KEYS TO SUCCESS FOR A HAZUS USER GROUP?

Experience to date indicates that a number of lessons learned can benefit those of you who are considering the formation of a HAZUS User Group. The keys to success include:

Be a "champion" for the HAZUS User Group. Champions most likely are public-sector risk managers in federal, state or local governments. You should consider the responsibility of leading the formation of a HAZUS User Group and the demands that doing so will make on your time. You should obtain the endorsement of your supervisor and co-workers; their support is crucial to your success.

Succesful HAZUS User Groups produce results

- Enhanced disaster-resistant communities (mitigation)
- Better planning based on risks (preparedness)
- Improved identification of target areas (response)
- Reliable estimates of costs to rebuild (recovery)

Share a common vision for the HAZUS User Group. You should develop a defined mission statement, goals, and objectives through a consensus-based process conducted with the members of your HAZUS User Group. While at first it may be your vision, commitment, and resources that develop the HAZUS User Group, you must loosen the reins, let other leaders and points of view emerge, listen to the stakeholders, and understand what motivates them to participate. They will participate only as long as the direction of the HAZUS User Group matches their own vision. You achieve consensus by staying organized, keeping the channels of communication open, and focusing on the group's common goals.

Consider FEMA staff to include in your HAZUS User Group. To date, FEMA has been involved in forming HAZUS User Groups and will continue this effort. FEMA offers technical expertise, knowledge, and experience combined with their development of HAZUS make them an ideal HAZUS member.

Promote a participatory and consensus-building process. Without a doubt, because of the diversity of organizations represented, competing agendas may cause conflict. Each organization participating in the group has its own view. Remember that the way a local government approaches an objective is different than the way a private company or nonprofit organization approaches the same objective. Seek out common goals.

Develop a standardized emergency management protocol for HAZUS users that addresses the production and delivery of HAZUS loss estimates. Many organizations and individuals may run HAZUS after a disaster. The accuracy of HAZUS runs depends on the quality of the data entered. An agreed-upon emergency management protocol defines which HAZUS runs will be accepted and distributed. It is imperative that you distribute accurate disaster information.

Be patient and let individuals find their niches within the partnership. Because stakeholders are volunteers, you should offer positions to individuals, but not assign roles. Remember that the partnership is based on human relationships.

Learn from other HAZUS User Groups. We will see proliferation of HAZUS User Groups as the other HAZUS applications are released (especially the HAZUS Flood module). The new organizations can learn from the experiences of existing HAZUS User Groups, such as BAHUG, especially in the areas of creating HAZUS User Groups, developing methods of archiving database resources, and displaying results on the Internet.

Spend time listening to the members of the HAZUS User Group. A public-private partnership that becomes a sustained entity thrives on the diversity of its members, all working toward a common goal. Remember that the leaders of the partnership are volunteers. They have emerged as leaders through their own initiative. They are probably strong-willed and determined individuals. Guide their energy and determination with patience; they are truly the greatest assets of the partnership.

You can learn from others

Members of the BAHUG from Southern California; Seattle, Washington; and the Midwest have begun HAZUS User Groups in their regions, drawing on the knowledge and resources they gained through their participation in the BAHUG.

Maintain frequent communications. Communicate often with the steering committee members of the HAZUS User Group, and use outreach tools to publicize your progress and success. Electronic mail and the Internet provide the best solution for internal and external communications. Press releases and brochures work well to communicate your activities to a larger audience.

WHERE CAN I GO FOR MORE INFORMATION AND HELP?

Many people, documents, and Internet sites can assist you in establishing and operating a HAZUS User Group. Some of your best resources include:

Technical support for questions about the installation, operation, and use of HAZUS:

- HAZUS Help Line
  (800) 955-9442
  Fax: (404) 261-0117 (Attn: HAZUSHELP)
  E-mail: HAZUSHEALP@durtech.com

Ideas and additional information for the application of HAZUS in your community:

- Milagros Kennett
  Federal Emergency Management Agency
  Mitigation Division
  500 C Street, S.W.
  Washington, D.C. 20472
  (202) 646-4158
  Fax: (202) 646-2577
  milagros.kennett@fema.gov

- Michael Hornick
  San Francisco Bay Area Users Group
  Federal Emergency Management Agency Region IX
  Mitigation Division, Building 105*
  P.O. Box 29998
  Presidio San Francisco, CA 94129
  (415) 923-7260
  Fax: (415) 923-7147
  michael.hornick@fema.gov

- HAZUS Information
  <http://www.fema.gov/hazus>
  This site is FEMA's web site specifically for HAZUS information and updates.

- HAZUS User Group web site
  <http://www.hazus.org>
  This site provides a quick way for new HAZUS User Groups to get information about HAZUS and HAZUS User Group activities. The site also can provide an electronic mail list server, and acts as an archive or national clearinghouse for HAZUS-related materials.

A more extensive list of internet resources is presented in Appendix B.

* After June 18, 2002 FEMA Region IX will move. The e-mail address remains the same.

APPENDIX A
BACKGROUND OF HAZUS SOFTWARE

The Federal Emergency Management Agency (FEMA), through a cooperative agreement with the National Institute of Building Sciences (NIBS), has developed a standardized, nationally applicable methodology for the estimation of losses. The methodology is implemented through PC-based Geographic Information System (GIS) software called HAZUS. Loss estimates calculated with HAZUS are intended for the use of local, state, and regional officials in planning and stimulating mitigation efforts to reduce losses before earthquakes, floods, and hurricanes occur and preparing for emergency response and recovery. HAZUS currently estimate losses for earthquakes and flood, and hurricane loss modules are nearing completion. The hurricane module will be expanded over the next few years to include storm surge hazards and to estimate losses to utility and transportation lifelines.

Necessary knowledge and skills of HAZUS users

To use HAZUS effectively for community mitigation planning, the following knowledge and skills will be necessary:

For all HAZUS users

All HAZUS users, at a minimum, should:

- Be accustomed to working in a Windows environment;
- Have knowledge of either MapInfo or ArcView, the GIS platforms HAZUS operates on;
- Be familiar with the general capabilities and limitations of software modeling;
- Be capable of understanding and using concepts of accuracy, error, scale, incremental improvements, data collection, validation, and similar subjects.

The HAZUS software uses GIS technology to produce detailed maps and analytical reports that describe a community's direct physical damage (building stock, critical facilities, transportation systems, and utility systems), including induced physical damage (inundation, fire, threats posed by hazardous materials, and debris) and direct economic and social losses (casualties, shelter requirements, and economic impact).

It is important to note that HAZUS may be used at three levels of complexity:

Level 1 uses HAZUS default data to create rapid impressions of the type of damage that a scenario may produce. Default data, from national databases, describe the regional geology, building inventory, and economic structure of a community.

HAZUS is available on CD-ROM and operates on a commercial GIS platform, currently MapInfo or ArcView

A computer-based tutorial (CBT) has been developed to demonstrate the software, and supplemental multiple-hazard databases for each state also are available on CD-ROM. A user's manual describes how to generate loss estimates, and a three-volume technical manual describes the technical and engineering theory of the methodology. Technical support is readily available from the FEMA web site at <http://www.fema.gov> and the National Institute of Building Sciences (NIBS) web site at <http://www.nibs.org> or by contacting staff at (800) 955-9442.

Level 2 requires user-modified default data and user-supplied data to achieve more refined results. For estimates at this level, the user must provide detailed information about local geology, a detailed inventory of buildings in the community, and data on utility and transportation systems.

Level 3 uses techniques supplied by experts to study special conditions of study sites, such as potential dam break scenarios, exposure to tsunami, and network analysis for electrical lifelines. The services of geotechnical and engineering experts who have the ability to enter specialized software routines are needed at this level.

APPENDIX B
HAZUS AND HAZUS USER GROUP RESOURCES*

MITIGATION, PREPAREDNESS, RESPONSE, AND RECOVERY ORGANIZATIONS

- Association of Sacramento Area Planners (ASAP) <http://www.zetsite.com/asap.htm>
- California Emergency Services Association (CESA) <http://www.cesa.net/>
- Business Continuity Institute <http://www.thebci.org/>
- Business Continuity Planners Association <http://www.bcpa.org/>
- Business Recovery Managers Association (BRMA) <http://www.brma.com/>
- Canadian Centre for Emergency Preparedness <http://www.ccep.ca/>
- Contingency Planning & Business Continuity World: Contingency Planning & Disaster Recovery Solutions <http://www.business-continuity-world.com>
- Contingency Planning & Management <http://www.contingencyplanning.com/>
- ContinuityPlanner.com <http://www.continuityplanner.com/>
- Disaster Recovery Information Exchange (DRIE) <http://www.drie.org/>
- Disaster Recovery Institute <http://www.drii.org/>
- Disaster Recovery Journal Glossary <http://www.drj.com/glossary/glossleft.htm>
- Emergency Preparedness Information Exchange (EPIX) <http://epix.hazard.net>
- GlobalContinuity.Com <http://www.globalcontinuity.com/>
- International Disaster Recovery Association <http://www.idra.com/>
- Internet Disaster Information Network <http://www.disaster.net/>
- Survive – The Business Continuity Group <http://www.survive.com/>

EARTHQUAKE

- Association of Bay Area Governments <http://www.abag.ca.gov>
- California Department of Conservation, Division of Mines and Geology <http://www.consrv.ca.gov/dmg/index.htm>

* Web sites are current as of publication date

- California Seismic Safety Commission <http://www.seismic.ca.gov/>
- Central United States Earthquake Consortium <http://www.cusec.org/>
- Earthquake Engineering Research Institute – EERI <http://www.eeri.org/>
- Hazus.org <http://www.hazus.org>
- National Information Service for Earthquake Engineering – NISEE <http://nisee.berkeley.edu/>
- National Institute of Building Sciences – NIBS <http://www.nibs.org/nibshome.htm>
- Northern California Earthquake Data Center – NCEDC <http://quake.geo.berkeley.edu/>
- Southern California Earthquake Center <http://www.scec.org/>
- U.S. Geological Survey (USGS) Advanced National Seismic System <http://www.anss.org/>
- USGS Earthquakes Hazards Program <http://earthquake.usgs.gov/>
- USGS National Earthquake Information Center – NEIC <http://neic.usgs.gov/>
- Western States Seismic Policy Council – WSSPC <http://www.wsspc.org/home.html>

FEDERAL AGENCIES

- Centers for Disease Control and Prevention <http://www.cdc.gov/>
- U.S. Department of Energy (DOE) Nevada Test Site <http://www.nv.doe.gov/nts/>
- DOE's Center of Excellence for Sustainable Development <http://www.sustainable.doe.gov/>
- Federal Bureau of Investigation <http://www.fbi.gov>
- Federal Emergency Management Agency <http://www.fema.gov>
- National Aeronautics and Space Administration (NASA) <http://www.nasa.gov/>
- National Infrastructure Protection Center <http://www.nipc.gov/>
- National Institute of Building Sciences <http://www.nibs.org>

- National Oceanographic and Atmospheric Administration <http://www.noaa.gov/>
- Office of Climate, Water and Weather Services, Natural Hazards Statistics <http://205.156.54.206/om/hazstats.shtml>
- U.S. Department of Defense <http://www.defenselink.mil/>
- U.S. Department of Health and Human Services <http://www.hhs.gov/>
- U.S. Department of Justice <http://www.usdoj.gov/>
- U.S. Department of Transportation <http://www.dot.gov/>
- U.S. Environmental Protection Agency <http://www.epa.gov/>
- U.S. Army Corps of Engineers <http://www.usace.army.mil/>
- U.S. Department of Agriculture <http://www.usda.gov/>
- U.S. Geological Survey <http://www.usgs.gov>
- U.S. Department of Housing and Urban Development <http://www.hud.gov/>

FEDERAL GOVERNMENT PROGRAMS

- National Flood Insurance Program <http://www.fema.gov/nfip/>
- Digital Flood Insurance Rate Maps (DFIRMs) <http://msc.fema.gov/MSC/dfirm.htm>
- National Earthquake Hazards Reduction Program <http://www.fema.gov/mit/eqmit1.htm>
- Water Information Coordination Program <http://water.usgs.gov/wicp/>

FIRE

- Air Force Reserve Command Fire <http://www.afres.af.mil/~fire/pages/firehome.htm>
- All American Environmental Services, Inc. < http://www.aaesi.com>
- Bromine Science and Environmental Forum – Fire Safety <http://www.firesafety.org>
- Bureau of Alcohol, Tobacco, and Firearms (ATF) <http://www.atf.treas.gov>
- Canadian Forest Service Fire Management Network <http://www.nofc.forestry.ca/fire/fmn/>

- Canadian Wildfire Network <http://www.denendeh.com/flycolor/wildfire/>
- EcoIQ Conserving the Built Environment <http://www.ecoiq.com/builtenvironment>
- Emergency Response and Research Institute EmergencyNet News Service <http://www.emergency.com>
- Emergency Services Interactive Simulations Fire Simulators <http://www.firesimulator.com>
- Fire Safety Institute <http://www.middlebury.net/firesafe/>
- Firebreak - A.C.T. Bush Fire Council Magazine <http://meteor.anu.edu.au/~barling/firebreak/firebreak.html>
- FireNet Information Network <http://online.anu.edu.au/Forestry/fire/firenet.html>
- Firesafe - Fire and Safety - USA <http://www.firesafe.com>
- Firesci.com <http://www.firesci.com>
- Firewise <http://www.firewise.org/>
- High Energy Access Tools <http://www.heat-fire.com>
- Hyattsville Volunteer Fire Department Fire Rescue WWW Directory <http://www.hyattsvillevfd.org/links/>
- International Association of Fire Chiefs <http://www.iafc.org>
- International Association of Fire Fighters Hazardous Materials Training <http://www.iaffhazmat.org/>
- International Society of Fire Service Instructors (ISFSI) <http://afem.org/afem/>
- Mennonite Disaster Service <http://www.mds.mennonite.net/>
- National Directory of Emergency Services <http://www.firejobs.com>
- National Institute of Building Standards - Building and Fire Research Laboratory <http://www.nist.gov/public_affairs/guide/bfrpage.htm>
- National Institute of Building Standards - Building and Fire Research Laboratory <http://www.bfrl.nist.gov>
- New York City (NY) Radio Amateur Civil Emergency Services <http://www.panix.com/clay/nyc-races/>
- Partners in Protection <http://www.partnersinprotection.ab.ca>
- Rapid Deployment Network <http://www.eci-communications.com/inet/ente>
- Rapid-Fire <http://www.disisit.com/rapid.html>

- Rescue-Net EMS and Fire Forums <http://www.Rescue-Net.com>
- Society of Fire Protection Engineers <http://www.inform.umd.edu/StudentOrg/sfpe/>
- Spanish Language Fire Programs Index <http://www.ibase.org.br/~esfao/cb.html>
- The Cannonball Express <http://www.best.com/~canonbal/>
- The Fire Station <http://www.flash.net/~jturner>
- Urban Search and Rescue Ohio Task Force 1 <http://users.erinet.com/22209/>
- Utah Fire and Rescue Academy <http://www.uvsc.edu/depts/academic/fs/ufra/>
- Verde Environmental, Inc. <http://www.micro-blaze.com>
- WILDLAND FIREFIGHTER Magazine <http://www.wildlandfirefighter.com>
- WMD First Responders.Com <http://www.wmdfirstresponders.com>
- Ziegler & Associates Training <http://emporium.turnpike.net/~web265/zigacad.htm>

FLOOD RESOURCES

- National Floodplain Management Organizations
- American Association of Code Enforcement <http://www.aace1.com/index.htm>
- American Public Works Association <http://www.apwa.net/>
- American Water Resources Association <http://www.awra.org/index.html>
- American Water Works Association <http://www.awwa.org/>
- Association of Contingency Planners <http://www.acp-international.com/>
- Association of State Dam Safety Officials <http://www.damsafety.org/>
- Association of State Wetlands Managers <http://www.aswm.org/index.htm>
- CBS News Disaster Page <http://cbsnews.com/digitaldan/disaster>
- Emergency Information Infrastructure Partnership <http://www.emforum.org/>
- Institute for Business & Home Safety <http://www.ibhs.org/>

- International Association of Emergency Managers <http://www.iaem.com/>
- International Erosion Control Association <http://www.ieca.org/>
- International Joint Commission (U.S.-Canada) <http://www.ijc.org/ijcweb-e.html>
- Multi-Objective Management Grants Directory <http://www.sonoran.org/cat/default.asp>
- National Association of Flood and Stormwater Management Agencies <http://www.nafsma.org/>
- National Association of Conservation Districts <http://www.nacdnet.org/>
- National Association of Counties <http://www.naco.org/>
- National Emergency Managers Association (NEMA) <http://www.nemaweb.org/index.cfm>
- National Governors Association <http://www.nga.org/>
- National Technical Information System (NTIS) <http://www.ntis.gov/>
- Network of Hazard Mitigation Officers <http://www.hazmit.net/>
- Dewberry & Davis, Technical Evaluation Contractor to FEMA's National Flood Insurance Program <http://www.dewberry.com/fip/>
- River Management Society <http://www.river-management.org/>
- The Natural Hazards Center <http://www.colorado.edu/hazards/>

ASFPM STATE CHAPTERS

- Arizona Floodplain Management Association <http://www.azfma.org/>
- Arkansas Floodplain Management Association <http://www.arkansasflood.org/>
- Illinois Association for Floodplain and Stormwater Management <http://www.illinoisfloods.org/>
- Indiana Association for Floodplain and Stormwater Management <http://www.geology.iupui.edu/Outreach/INAFSM/>
- New Mexico Floodplain Managers Association <http://weather.nmsu.edu/nmfma/>
- North Carolina Association of Floodplain Managers <http://www.ncafpm.org/>

- Oklahoma Floodplain Managers Association <http://www.okflood.org/>
- Texas Floodplain Management Association <http://www.tfma.org/>

OTHER FLOODPLAIN MANAGEMENT LINKS

State and Regional

- Alaska Division of Community and Business Development <http://www.dced.state.ak.us/mra/Mradplan.htm>
- Arkansas SWCC (spell out) <http://www.state.ar.us/aswcc/>
- California Floodplain Management <http://www.fpm.water.ca.gov/>
- California Office of Emergency Services <http://www.oes.ca.gov>
- Colorado Water Conservation Board <http://cwcb.state.co.us/>
- Floodplain Management Association <http://floodplain.org/>
- Florida Division of Emergency Management <http://www.dca.state.fl.us/fdem/index.htm>
- Kansas Association for Floodplain Management <http://www.kafm.org/>
- Maine Floodplain Management Program <http://www.state.me.us/spo/flood/brochure.htm>
- Michigan Department of Environmental Quality <http://www.deq.state.mi.us/lwm/>
- Missouri Emergency Preparedness Association <http://www.sema.state.mo.us>
- Montana Department of Natural Resources <http://www.dnrc.state.mt.us>
- New England Floodplain and Stormwater Managers Association <http://www.nefsma.org/>
- North Carolina Emergency Management <http://www.ncem.org/>
- Oklahoma Water Resources Board <http://www.state.ok.us/~owrb/>
- South Carolina Department of Natural Resources <http://water.dnr.state.sc.us/water/envaff/flood/scnfip.html>
- Texas Natural Resource Conservation Commission <http://www.tnrcc.state.tx.us/water/>
- Virginia Floodplain Management Association <http://www.vaflood.org/>

- Virginia's Floodplain Management Program <http://www.dcr.state.va.us/sw/floodpln.htm>
- Wisconsin Department of Natural Resources <http://www.dnr.state.wi.us/org/water/wm/dsfm/flood/title.htm>

Communities

- Boulder Creek Watershed <http://csf.colorado.edu/bcwatershed/>
- Denver, CO Urban Drainage and Flood Control District <http://www.udfcd.org/>
- Fargo, ND <http://www.ndsu.nodak.edu/fargoflood/>
- Franklin County, OH <http://www.co.franklin.oh.us/development/>
- Harris County, TX Office of Emergency Management <http://www.hcoem.org/>
- Hilton Head Island, SC <http://www.ci.hilton-head-island.sc.us/>
- Lake County, IL Stormwater Management Commission <http://www.co.lake.il.us/smc/index.htm>
- Maricopa County, AZ <http://156.42.96.70/>
- Pima County, AZ <http://www.dot.co.pima.az.us/flood/fpm/>
- Santa Clara Valley Water District, CA <http://www.scvwd.dst.ca.us/>
- Skagit County, WA <http://www.skagitcounty.net/flood/index.htm>

GIS ASSOCIATIONS

- American Congress for Surveying and Mapping, ACSM <http://www.acsm.net/>
- American Planning Association (APA) <http://www.planning.org/>
- Association of American Geographers (AAG) <http://www.aag.org/>
- Bay Area Automated Mapping Association (BAAMA) <http://www.baama.org/>
- Center for International Earth Science Information <http://www.ciesin.org/>
- Delaware Valley Regional Planning Commission <http://www.dvrpc.org/>
- Geographic Information Systems Advisory Council <http://www.state.nm.us/gisac/>
- Geospatial Information & Technology Association, <http://www.gita.org/>

- National Center for Geographic Information and Analysis <http://www.ncgia.ucsb.edu/>
- National Council for Geographic Education <http://www.ncge.org/>
- National Geographic Society <http://www.nationalgeographic.com/>
- National States Geographic Information Council <http://www.nsgic.org/indexframe.html>
- Nebraska GIS/LIS Association, Inc. <http://www.calmit.unl.edu/gislis/>
- Open GIS Consortium, Inc (OGIS) <http://www.opengis.org/>
- The American Society for Photogrametry & Remote Se <http://asprs.org/>
- The Cartography and Geographic Information Society <http://www.acsm.net/cagis/index.html>
- The Geographic and Land Information Society (GLIS) <http://www.acsm.net/glis/index.html>
- The National Society of Professional Surveyors <http://www.acsm.net/nsps/index.html>
- United States Geological Survey <http://www.usgs.gov/>
- University Consortium for Geographic Information <http://www.ucgis.org/>
- Urban and Regional Information Systems Association <http://www.urisa.org/>

GIS USER GROUPS

- Forestry Spacial Interest Group <http://users.lewiston.com/dlm/>
- GIS Data for Northern California <http://www.pacificsites.com/~cbrooks/gis1.shtml>
- Montana Interagency GIS Technical Working Group <http://mtgeo.org/itwg/>
- NE Oregon GIS Users Group <http://www.oregontrail.net/~akramer/ neorgisug.htm>
- Northeast ARC User Group <http://www.northeastarc.org/>
- Tennessee Geographic Information Council <http://toltec.lib.utk.edu/~tngic/>

HURRICANE/WIND

- FEMA – Hurricane Fact Sheet <http://www.fema.gov/library/hurricaf.htm>
- Hurricane and Storm Tracking for the Atlantic and Pacific Oceans <http://hurricane.terrapin.com/>
- Hurricane and Tropical Storm Info, Southern Regional Climate Center, Louisiana State University <http://www.srcc.lsu.edu/OEP/tropical.html>
- Hurricane Hunters Home Page <http://www.hurricanehunters.com/>
- Hurricane Watch Net <http://www.hwn.org/>
- Mennonite Disaster Service <http://www.mds.mennonite.net/>
- National Hurricane Center – Tropical Prediction Center <http://www.nhc.noaa.gov/>
- National Institute of Building Standards - Building and Fire Research Laboratory <http://www.nist.gov/public_affairs/guide/bfrpage.htm>
- National Institute of Building Standards - Building and Fire Research Laboratory <http://www.bfrl.nist.gov>
- National Weather Service Disaster Survey Reports <http://www.nws.noaa.gov/om/omdis.htm>
- Northwest Medical Teams <http://www.nwmti.org>
- Purdue University Hurricane and Tropical Data <http://wxp.atms.purdue.edu/hurricane/index.html>
- ShatterGard Safety Window Films <http://www.shattergard.com>
- Starstone's Eye of the Storm Tracking Software <http://www.starstonesoftware.com/eots/>
- Texas Tech University Wind Engineering <http://www.ce.ttu.edu/wind>

NONPROFIT ORGANIZATIONS

- American Red Cross <http://www.redcross.org>
- Northeast States Emergency Consortium <http://www.nesec.org>
- Western Disaster Center <http://www.westerndisastercenter.org>

STATE EMERGENCY MANAGEMENT AGENCIES

- Alabama Emergency Management Agency <http://www.aema.state.al.us/>

- State of Alaska (U.S.A.) Department of Military Affairs, Division of Emergency Services <http://www.ak-prepared.com/>
- State of Arizona (U.S.A.) Division of Emergency Management <http://www.state.az.us/es/>
- State of Arkansas Office of Emergency Services <http://www.adem.state.ar.us/>
- State of California (U.S.A.) Governors Office of Emergency Services <http://www.oes.ca.gov/>
- State of Colorado (U.S.A.), Department of Local Affairs, Office of Emergency Management <http://www.dola.state.co.us/oem/oemindex.htm>
- State of Delaware (U.S.A.) Emergency Management Agency <http://www.state.de.us/dema/index.htm>
- State of Florida (U.S.A.) Division of Emergency Management <http://www.floridadisaster.org>
- State of Georgia (U.S.A.) Emergency Management Agency <http://www.State.Ga.US/GEMA/>
- State of Hawaii (U.S.A.) Civil Defense System <http://www.scd.state.hi.us/>
- State of Idaho (U.S.A.) Bureau of Disaster Services <http://www.state.id.us/bds/bds.html>
- State of Illinois (U.S.A.) Emergency Management Agency <http://www.state.il.us/iema>
- State of Indiana (U.S.A.) Emergency Management Agency <http://www.ai.org/sema/index.html>
- State of Iowa (U.S.A.) Emergency Management Home Page <http://www.state.ia.us/government/dpd/emd/index.htm>
- State of Kansas (U.S.A.) Division of Emergency Management <http://www.ink.org/public/kdem/>
- State of Louisiana (U.S.A.) Office of Emergency Preparedness (LOEP) web site <http://www.loep.state.la.us>
- State of Maine (U.S.A.) Emergency Management Agency <http://www.state.me.us/mema/memahome.htm>
- State of Maryland (U.S.A.) Emergency Management Agency <http://www.mema.state.md.us/>
- State of Massachusetts (U.S.A.)Emergency Management Agency <http://www.state.ma.us/mema>

- State of Michigan (U.S.A.) Emergency Management Division - Michigan Department Of State Police <http://www.msp.state.mi.us/division/emd/emdweb1.htm>
- State of Minnesota (U.S.A.) Department of Public Safety, Division of Emergency Management <http://www.dps.state.mn.us/emermgt/>
- State of Mississippi (U.S.A.) Emergency Management Agency <http://www.memaorg.com>
- State of Missouri (U.S.A.) Emergency Management Agency <http://www.sema.state.mo.us/semapage.htm>
- State of Nebraska (U.S.A.) Military Department (U.S.A.) <http://www.nebema.org>
- State of Nevada (U.S.A.) Division of Emergency Management <http://www.state.nv.us/dmv_ps/emermgt.htm>
- State of New Hampshire (U.S.A) Office of Emergency Management <http://www.nhoem.state.nh.us/>
- State of New Mexico (U.S.A.) Department of Public Safety <http://www.dps.nm.org/emc.htm>
- State of New York (U.S.A.) Emergency Management Office <http://www.nysemo.state.ny.us/>
- State of North Carolina (U.S.A.) Division of Emergency Management <http://www.dem.dcc.state.nc.us/>
- State of North Dakota (U.S.A) Department of Emergency Management (DEM) <http://www.state.nd.us/dem>
- State of Ohio (U.S.A.) Emergency Management Agency <http://www.state.oh.us/odps/division/ema/>
- State of Oklahoma (U.S.A.) Department of Civil Emergency Management <http://www.onenet.net/~odcem/>
- State of Oregon (U.S.A.) - Emergency Management Division <http://www.osp.state.or.us/oem/oem.htm>
- State of Pennsylvania (U.S.A.) Emergency Management Agency (PEMA) <http://www.pema.state.pa.us>
- State of Rhode Island (U.S.A.) Emergency Management Agency <http://www.state.ri.us/riema/riemaaa.html>
- State of South Carolina (U.S.A.) Emergency Preparedness Division <http://www.state.sc.us/epd/>
- State of South Dakota (U.S.A.), Dept. of Military and Veterans Affairs <http://www.state.sd.us/state/executive/military/military.html>

- State of Tennessee (U.S.A.) Emergency Management Agency <http://www.tnema.org>
- State of Texas (U.S.A.) Department of Public Safety <http://www.txdps.state.tx.us/dem/>
- State of Utah (U.S.A.) Division of Comprehensive Emergency Management <http://www.cem.ps.state.ut.us>
- State of Vermont (U.S.A.) Division of Emergency Management <http://www.dps.state.vt.us/>
- State of Virginia (U.S.A.) Department of Emergency Management <http://www.vdem.state.va.us>
- State of Washington (U.S.A.) - Emergency Management Agency <http://www.wa.gov/wsem/>
- State of West Virginia (U.S.A.) Emergency Management Agency <http://www.state.wv.us/wvoes>
- State of Wyoming (U.S.A.) Emergency Management Agency <http://wema.state.wy.us>
- Washington, D.C. (U.S.A.) Office of Emergency Preparedness <http://www.fema.gov/dc-oep/>

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